

**Proposed Amendments to 20.7.3.301 and 703 NMAC to Accommodate Natural  
Hydrogeologic Protection  
August 23, 2011 Discussion Draft**

**Nitrogen Loading**

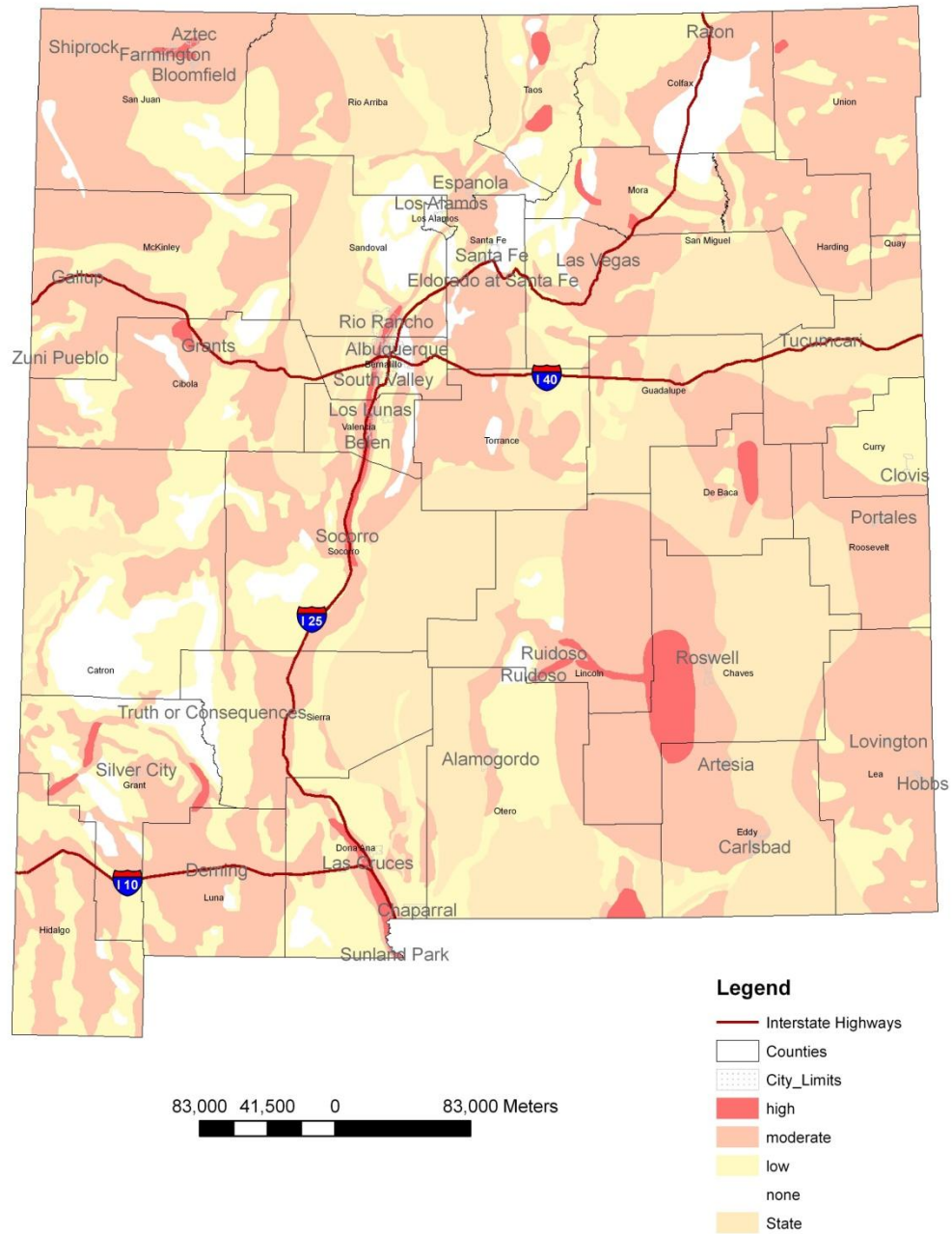
There are areas in New Mexico where groundwater either does not exist, contains excessive salinity, or has little vulnerability to contamination (Figure 1). In these areas, nitrogen loading from onsite liquid waste systems is not a factor in the protection of water quality and public health, and the lot size requirements of regulation 20.7.3.301 should not be administered.

The following language is proposed to be added as a new Subsection K of 20.7.3.301 NMAC.

K. The department may identify and map areas of the state where groundwater is not at risk from nitrogen loading from onsite liquid waste systems, and where the requirements of this section shall not apply. The following hydrogeologic conditions may be considered when determining if groundwater is not at risk:

1. Groundwater does not exist;
2. Uppermost groundwater contains a total dissolved solids concentration greater than 10,000 milligrams per liter;
3. Uppermost groundwater occurs under confined conditions;
4. Uppermost groundwater occurs at a depth between 400 and 600 feet with one or more geologic strata in the vadose zone that may act as a capillary barrier; and
5. Uppermost groundwater occurs at a depth greater than 600 feet.

**Figure 1**  
**Aquifer Sensitivity**



## Gravel Content

Regulation 20.7.3.303.B requires a clearance of 4 feet of suitable soil from the bottom of the drainfield to ground water or another limiting layer. Regulation 20.7.3.7.S.13 NMAC states “‘suitable soil’ means a soil, whether naturally occurring or introduced, that will treat the primary effluent effectively and act as an effective filter and remove organisms and suspended solids prior to the effluent reaching ground water, bedrock or a limiting layer, and that will provide adequate transmission to prevent a failed system; suitable soils are classified Table 703.1.” While Table 703.1 does not include gravel, the presence of gravel in drainfield soil is addressed elsewhere in Regulation 20.7.3.703 NMAC. Subsection 703.F states, “Conventional treatment systems shall not be constructed in type Ia soils where the depth to groundwater is less than 30 feet or gravel.” Subsection 703.I states, “The gravel content of in-place natural soil shall not exceed 30%.” Regulation 605 does not specify the level of treatment required for gravelly soil, but the department has required secondary treatment with disinfection in the past.

The purpose of these regulations is to ensure that percolating effluent will travel through at least 4 feet of soil that will filter out microbes and suspended solids prior to entering groundwater or encountering a limiting layer. There are situations, however, where gravelly soil overlies other sediment that into which effluent will percolate and be treated. Subsection 703 disqualifies gravelly soil regardless of the depth to groundwater, and regardless of whether or not four feet of suitable soil underlie a gravelly layer into which a drainfield is to be placed.

Figures 2 and 3 are pictures of a sedimentary deposit in Placitas that contains more than 30% gravel. At this location, however, the gravel is underlain by approximately 150 feet of other basin fill sediment consisting mostly of sand and finer grained material. Figures 4 and 5 are pictures of a gravelly layer in San Juan County. This layer also contains more than 30% gravel and is underlain by approximately 75 feet of finer-grained sediment. Given that the clearance requirement is 4 feet of suitable soil, and that groundwater occurs much deeper than 4 feet at each site, a requirement for secondary treatment and disinfection would not be justified at either site for the purpose of groundwater protection.

Another factor is that finer-grained materials often fill the interstices between the gravel stones, rather than empty void space (See Figure 3). Effluent will receive some treatment by migrating around the gravel stones thru these finer-grained sediments.

Figure 2. Placitas, NM. gravel layer.



Figure 3. Placitas, NM gravel layer closeup.





Figure 4. San Juan County, NM gravel layer.



Figure 5. San Juan County, NM gravel layer deposited on finer-grained sediment.



For these reasons, the following amendments to Subsection 20.7.3.703.F, Table 703.1, and to Subsection 20.7.3.703.I NMAC are proposed.

The reference to gravel in Subsection 20.7.3.703.F NMAC is proposed to be ~~deleted~~ as follows:

F. Conventional treatment systems shall not be constructed in type Ia soils where the depth to groundwater is less than 30 feet ~~or gravel~~. For these soils, refer to 20.7.3.605 NMAC.

The following new material is proposed to be added to the soil texture description for Ia type soil in Table 703.1.

Soil Type	Soil Texture	Application Rate (AR) (sq. ft./gal/day)
Ia	Coarse Sand <u>or Up To 30% Gravel</u>	1.25 (See Subsection F of 20.7.3.703 NMAC)

The following new material is proposed to be added to Subsection I of 20.7.3.703 NMAC.

- I. The gravel content of in-place natural soil shall not exceed 30%. The department may identify and map areas of the state where groundwater is not at risk from microbial contamination from onsite liquid waste disposal systems that discharge into gravel, and where gravel contents greater than 30% may be allowed. The following hydrogeologic conditions may be considered when determining if groundwater is not at risk:
1. Groundwater does not exist;
  2. Uppermost groundwater contains a total dissolved solids concentration greater than 10,000 milligrams per liter;
  3. Uppermost groundwater occurs under confined conditions; and
  4. Uppermost groundwater occurs at a depth of 30 feet or greater with at least 4 feet of suitable soil in the vadose zone.